

LIGHT-CONTROL ELEMENTS AND MATERIALS

ABSTRACT

The disclosure relates to a light-control element including a transparent surface layer oriented in an uniaxial direction, a center layer comprising a skeletal member and a plurality of cavities arranged at intervals and oriented parallel to the uniaxial direction of the surface layer, and a base layer. In some embodiments, the light-control element includes a liquid crystal material at least partially filling the cavities. In certain preferred embodiments, each of the surface layer and the base layer include one or more electrodes adapted for application of an electrical potential to the liquid crystal material. The disclosure also provides methods of manufacturing and using light control window glazings including light-control elements containing liquid crystal materials for efficient thermal management of interior spaces of vehicles and buildings.